

REMARKS

Claims 1-25 are pending. Claims 1-5 and 8-19 have been withdrawn from consideration. Claim 6 has been amended to further distinguish over the cited references. Support for the amendment may be found in the Specification as filed at least on page 4, paragraph [0069] (US2003/0043318). No new matter has been added. The rejections of the claims are respectfully traversed in light of the amendments and following remarks, and reconsideration is requested.

Rejections Under 35 U.S.C. § 103

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuyama et al. (U.S. Patent No. 5,633,739) (hereinafter "Matsuyama") in view of Takao et al. (U.S. Patent No. 5,568,293) (hereinafter "Takao").

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuyama in view of Takao and further in view of Nakamura et al. (U.S. Patent No. 5,725,975) (hereinafter "Nakamura").

Claims 20-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuyama in view of Takao and further in view of Kim (U.S. Patent No. 6,567,150).

In rejecting the claims, the Examiner writes in part in the Final Office Action dated November 16, 2005 (the "Final Office Action"):

Matsuyama does not appear to explicitly specify that wherein the peripheral portion of the neighboring color filters overlap each other.

Takao illustrates, at least with reference to Figure 4A, peripheral portions of the color filters overlapping with peripheral portions of other color filters. Takao furthermore illustrates each color resin pattern having a peripheral portion that touches a black matrix (light intercepting layer 117 formed in conformity with gap between respective units of color pattern layers (Column 19, Lines 18-27).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Matsuyama in view of Takao for reduced alignment defect.

However, Applicant submits that Matsuyama teaches throughout the disclosure in each of the embodiments "a protective area for protecting against dye diffusion filling the gaps between the colored patterns" with the "protective area against dye diffusion [being]

constituted of a not-colored part FIL(T) of a dye receiving layer, protective overcoats PSV2 and PSV3, or of a black matrix with a high heat resistance." (Matsuyama, Abstract) (emphases added). In particular, Matsuyama discloses the following:

[T]he colored areas FIL(R), FIL(G), and FIL(B) were divided by providing the protective area against dye diffusion with a transparent non-colored area FIL(T), so that color mixing was prevented. (Matsuyama, Embodiment 1, col.8, lines 27-30; FIGS. 1 and 2) (emphasis added).

Moreover, as an example of improving the heat resistance, FIGS. 3 to 4 show a sectional view of an essential part of a color filter. The following is a fabrication process example, as shown in FIGS. 11(a) to 11(e). . . . In the case of this embodiment, the patterns of all colors were simultaneously formed as the dye receiving layer 1 by only one photolithography process without repeating the photolithography process for each primary color, unlike the conventional method. . . . The section of three primary color patterns is shown [in] FIGS. 3 to 4 and they are divided into areas by separating patterns for each pixel element or each color by grooves. . . . Moreover, to improve the heat resistance as a color filter, a protective overcoat [PSV2] is formed on and between colored patterns. This structure makes it possible to effectively prevent color mixing and color fading of color patterns . . . (Matsuyama, Embodiment 2, col.9, lines 35-59; FIGS. 3-4 and 11(a)-11(e)) (emphasis added).

As shown in FIG. 5, . . . a second dye diffusion stopper PSV3 was formed on the surface of the colored layers as a transparent inorganic film or an organic film having no dyeing function in order to further improve the dye diffusion preventive effect.

(Matsuyama, Embodiment 3, col.10, lines 17-21; FIG. 5).

By filling the protective area against dye diffusion between colored patterns with a black matrix material superior in the heat resistance and having a low transmittance, it is possible to prevent the dye in a colored layer from diffusing in the lateral direction. (Matsuyama, Embodiment 4, col.10, lines 53-57; FIGS. 6-7, 12(a)-12(e)) (emphasis added).

With this structure, the color patterns that form the color filters FIL(R), FIL(G), FIL(B) are separated from each other by a preformed black matrix BM, as shown in FIG. 7, so that unwanted color mixing due to dispersion of dyes on the same plane can be prevented.

(Matsuyama, Embodiment 4, col.11, lines 57-61; FIG. 7) (emphasis added).

[P]atterns corresponding to three primary colors were formed through exposure and development using an ordinary photolithography. In this case, the patterns were formed by setting gaps between the patterns and dividing them into areas.

(Matsuyama, Embodiment 5, col.12, lines 32-36; FIGS. 8 and 9).

Matsuyama further discloses in the claims "a dye prevention area filling gaps between the color patterns" (independent claim 1), "a layer of three primary colored patterns colored by thermal dye transfer technology, the colored patterns being separated by gaps" (independent claims 8 and 22), and a "color filter substrate including three primary color filters separated by a black matrix" (independent claims 17 and 20).

Thus, Matsuyama discloses in all the embodiments: (1) a non-colored part FIL(T) of a dye receiving layer; (2) protective overcoats PSV2 and/or PSV3; and/or (3) a black matrix BM, between the color filters for separating the color patterns and for preventing color diffusion. Accordingly, Matsuyama discloses color filters which are separated from each other to prevent dye diffusion.

In the Advisory Action, the Examiner states that the "embodiment relied upon by the Examiner (Figures 11(a)-11(e)) does not teach the transparent non-colored area. See also Figure 3 – lacking the transparent non-colored area."

FIGS. 11(a)-11(e) show a fabrication process for the structure shown in FIG. 3. Matsuyama clearly shows in FIGS. 11(a)-11(e) and FIG. 3 (1) a protective overcoat PSV2, and (2) a black matrix BM, between the color filters for separating the color patterns and for preventing color diffusion.

Modifying Matsuyama in view of Takao such that peripheral portions of the neighboring color filters overlap each other, would destroy the intent, purpose, and function of the invention disclosed in Matsuyama. Matsuyama teaches away from such a modification. Accordingly, Applicant submits that Matsuyama is not properly combinable with Takao and the presently claimed invention would not have been obvious to one of ordinary skill in the art at the time of invention in view of the cited references.

As noted in prior remarks, Takao describes "Next, on the glass substrate having the colored pattern of the three colors formed thereon, . . . a light intercepting layer 117 with a light intercepting pattern is formed in conformity with the gap between the respective units . . . by use of a black colored resin material" (Takao, col.19, lines 18-23). Since the light intercepting layer 117 is formed after the colored patterns 114, 115, 116 are formed on the glass substrate 111, Takao fails to disclose or suggest the step of "sequentially forming a plurality of color filters . . . on the substrate and the black matrix," as recited in Claim 1.

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Nakamura and Kim do not remedy the deficiencies of Matsuyama and Takao noted above.

In contrast, Claim 6 recites "sequentially forming a plurality of color filters neighboring each other on the substrate and the black matrix . . . wherein the peripheral portions of the neighboring color filters overlap each other and have a taper angle less than 40 degrees." Accordingly, because the cited references, alone or in combination, do not disclose or suggest all the limitations of Claim 6, Claim 6 is patentable over Matsuyama, Takao, Nakamura, and Kim, alone or in combination.

Claims 7 and 20-25 are dependent on Claim 6, and contain additional limitations that further distinguish them from the cited references. Therefore, Claims 7 and 20-25 are allowable over Matsuyama, Takao, Nakamura, and Kim, alone or in combination, for at least the same reasons provided above with respect to Claim 6.

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CONCLUSION

For the above reasons, Applicant submits that all pending Claims 6-7 and 20-25 are now in condition for allowance and allowance of the Application is hereby solicited. If the Examiner has any questions or concerns, the Examiner is hereby requested to telephone Applicant's Attorney at (949) 752-7040.

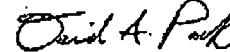
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Respectfully submitted,



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